



Science News-Letter

The Weekly Summary of Current Science

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FORESTRY

New Hybrid Trees to Make Farming of Forestry

By FRANK THONE

Viewing with alarm the inroads made upon our forests by the hourly, or even half-hourly, editions of daily papers, and the pounds of bulk of Sunday editions, has become one of the better known of our indoor sports. Not without some reason, either, as a rough test can indicate. Weigh any average Sunday paper. Multiply it by the circulation figures. Multiply that by the number of newspapers in this country that print Sunday editions—six or seven hundred of them. It begins to look like Henry Ford's income tax, but it's just a hint of one of the problems that is plaguing editors and conservation experts alike.

The U. S. Department of Commerce figures for 1925, the last year for which they are complete, show that the United States produced 3,962,217 tons of wood pulp, and imported 1,603,614 tons more, making a total of 5,565,831 tons. Of course, by no means all of this went into newspapers. Magazines and books, of the making of which there is no end, took up a lot of it, and then there was writing paper, wrapping paper, building paper, wall paper, and a thousand and one other kinds of paper and things that are made from paper. In addition, there was a vast deal of paper pulp that never became paper at all, but was turned into the rayon that is advertised in your Sunday newspaper as everything from lingerie to window drapes. Now that the forests are called upon to supply part of our wearing apparel as well as most of our reading matter, and may soon be asked to fill our sugar-bowl too, the problem of replacing our vanishing original stock of trees becomes one of every-increasing importance.

Efforts, and fairly successful ones too, at the solution of this problem are, of course, no new story. Paper companies and lumber concerns, as well as government agencies, have

done something toward the restocking of cut-over lands with trees, especially in the spruce lands of the northern United States and Canada. Forest seeds and nursery-propagated seedlings have become staple articles of commerce, and to cut an acre without arranging to replant it has come

to be regarded as reprehensible by the sons of the old-time lumbermen who used to think our forests "inexhaustible."

Forestry Far Behind Farming

Yet with all the care we have taken, our forestry has remained in one respect very primitive, as compared with our agriculture. The trees we have planted, and are still planting, are exactly the same as the trees that grow in the forests, good specimens of wild species, with nothing done to improve them for human use. In agriculture, man has not done anything of that kind since the later Stone Age, when he gathered seeds of wild grasses and roots of wild vegetables and planted them around his huts. Even before he learned how to write he learned how to breed improved plants, so that the wild form of ordinary corn is totally unknown and the wild form of wheat is a matter of conjecture and of much dispute among botanists. Yet to this very day he continues to plant seeds gathered from unimproved, wild timber trees when he wants a new crop of forest. Some work is now under way, with promising results so far, toward the improvement of certain of our native nut trees, such as the black walnut and the hickory, but this is rather to be classified with the breeding of orchard trees, and falls in with the cultivation of such Old World species as the English walnut and the European chestnut and filbert. A notable success already scored with a native tree is the pecan. But of similar work with trees of value primarily for their wood there has been to date hardly a hand's turn done.

But now, with the fact that we are using our pulpwood from four to six times as fast as we are regrowing it haunting us like a hungry specter, three scientists have combined forces to see whether it may not be possible

(Just turn the page)



THE HIGHER BOTANY: Workers on the problem of growing bigger and better poplars for paper pulp had to climb each tree half a dozen times and conduct delicate scientific operations while perched dizzily on an upper branch.

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Hybrid Trees

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to find some answer besides increased acreage of the ordinary, familiar types of trees. Their ambition is not to make two trees grow where one grew before, but to make a quick-growing, right-shaped, large-sized tree grow where a little crooked one grew before.

These three men, Dr. A. B. Stout, of the New York Botanic Garden; Dr. Ralph H. McKee, of Columbia University, and E. J. Schreiner, who conducts research for the Oxford Paper Company, financial backers of the experiments, first looked about for the best tree genus to work on. They did not have to look very far. Paper mills have appetite mainly for two trees, spruce and poplar. The wood of these two trees best satisfies the requirement of the paper industry for fibers that are long and tough without being hard, that are fairly uniform in diameter, that come apart readily when put through the mill, and that are not messed up with resin or deposits of other disagreeable and bothersome chemicals. Spruce is most used now; nearly two-thirds of the world's paper-pulp product is made from it.

Poplar the Best Paper Tree

But it has not always been so. When wood-pulp was first used on a large scale in newspaper manufacture, Dr. McKee states, poplar was the favored genus. Later, due to the fact that its price became a little higher per cord than spruce, the change was made to the latter wood. This new spruce paper was found to give a harsher and harder paper, which more rapidly wore out the type. In consequence, in order to have fresh and clear types, the system of casting whole pages as solid plates, known as stereotyping, was developed, and this was soon followed by the invention of the linotype, and that by the mono-

(Continued on page 305)

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the *SCIENCE NEWS-LETTER* has since proved interesting to laymen, scientists, students, teachers and children.

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The classics of science and striking passages from current books, addresses and periodicals are carefully selected and published.

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Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

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Spring is Bird Travel Time

The material on this page is furnished by the Coordinating Council on Nature Activities.

Nature Study Coordination

Realizing the need for a national program that would coordinate the nature activities of national groups working with young people, the American Museum of Natural History invited these volunteer organizations to form a council to be known as the Coordinating Council on Nature Activities for the purpose of teaching the growing generation, through nature activities, the value of all wild life and natural resources and their conservation.

The organizations represented are as follows:

American Museum of Natural History, American Nature Study Society, Boy Scouts of America, Camp Directors' Association, Camp Fire Girls, Inc., Girl Scouts, Inc., Pioneer Youth of America, Playground and Recreation Association, and the Woodcraft League of America.

The representatives of these girls' and boys' groups adopted the following lines of activity:

1. Coordinating the nature programs of young people's organizations.
2. Focusing attention in these nature programs on conservation of wild life and natural resources.
3. Cooperating with other established groups in furthering their programs for nature conservation.
4. Encouraging public schools and other educational institutions to include nature study and conservation in their courses of study.
5. Developing methods whereby these organizations can give their best services to the public schools and similar institutions in furthering nature conservation.
6. Promoting needed legislation in connection with their program.

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Food For Feathered Friends

"They are here, there, and everywhere, and many more are on the wing." Competent authorities estimate that there are in the United States 3,800,000,000 nesting birds of all kinds and that in addition 3,800,000,000 more birds pass through the United States in their regular migratory journey. This vast army represents approximately 1,200 different kinds of birds as recorded, for entire North America. Approximately 350 different kinds occur in Iowa and about 400 in the State of Illinois. No other group of our wild life com-

mands such wide-spread interest and universal attraction as birds. Birds offer unusual opportunities for cultivating the powers of observation as well as purposes of recreation and study for playground groups. Birds are the real friends and partners of man in his continuous warfare against injurious weeds, insects and some mammals. Gradually, however, the covering and food of birds are being destroyed by the hand of man in his industrial and agricultural interests. So that it presents a real question as to just how and where all of these birds are to find suitable shelter and nesting places.

It has been shown that if suitable nesting and feeding conditions are provided, playgrounds, playfields and parks, as well as home grounds, can be made miniature bird sanctuaries, and that increasing variety of birds may by this provision be encouraged to take up permanent or summer residence with us. With the placing of rustic type bird houses, bird baths, feeding stations, and the planting of trees and shrubs valuable as food and nesting places and places of protection, and with ever watchful care of our own or our neighbor's cat, we may expect the successful beginning



Bound North

Did you ever chance to hear the midnight flight of birds passing through the air and darkness overhead, in countless armies, changing their early or late summer habitat? It is something not to be forgotten.

I thought it rare music. You could hear the characteristic motion—once or twice "the rush of mighty wings," but often a velvety rustle, long drawn out—sometimes quite near—with continual calls and chirps, and some song-notes. I could make out the bobolink, tanager, Wilson's thrush, white-crown'd sparrow, and occasionally from high in the air came the notes of the plover.

—Walt Whitman.

Science News-Letter, May 14, 1927

of a community center of birds.

The following list is of plants that bear fruit sought for by birds and will provide for them protection and a place for the building of their nests:

Trees

| | |
|----------------|---------------|
| Red Cedar | Black Cherry |
| Hackberry | Hercules Club |
| Red Mulberry | Hawthorns |
| White Mulberry | Mountain Ash |
| Choke Cherry | Pin Cherry |

Shrubs

| | |
|---------------------|----------------|
| Red-berried Elder | Shadbush |
| Common Elder | Wahoo, Burning |
| Wayfaring Tree | Bush |
| Nannyberry | Black Alder |
| Arrow-wood | Blackberry |
| High-bush Cranberry | Dewberry |
| Huckleberry | Juneberry |
| Osier Dogwood and | Chokeberry |
| all other Cornels | Common Juniper |

Climbers

| | |
|------------------|--------------------|
| Bittersweet | Northern Fox Grape |
| Virginia Cooper, | Frost Grape |
| Woodbine | River Bank Grape |
| | Honeysuckles |

Herbaceous Plants

| | |
|------------|----------|
| Sunflowers | Millet |
| Kaffir | Pokeweed |

Flowers

| | |
|-----------|-------------|
| Coreopsis | Cornflowers |
| | Zinnias |

Note: This list is for materials that usually grow well in Illinois. Towns south or north of this section or in particularly arid sections should have the advice of local horticulturists.

It has been observed that the younger as well as the older groups of children take keen delight in the planting and care of trees and shrubs useful to birds. It easily becomes a regular activity in the playground program. One learns the life habits of the birds and the materials on which they subsist, their names and the names of trees and shrubs native to the State or the country. The life histories of the imported shrubs and trees make interesting stories. The child observes the birds securing food, protection and homes in the very plants that he helped to establish. He learns to have a human interest in nature and a greater appreciation of the mystery and beauty of life.

—By Harry Allen, Playground and Recreation Association of America.

Science News-Letter, May 14, 1927

Bird Sounds At Night

Identifying birds by their songs at night is an interesting and novel test of one's bird lore. Recognition by day is comparatively easy because of the daylight environment; though the bird may not be seen, the place that it frequents may be

(Just turn the page)

Bird Sounds

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located and the identification thereby helped.

At the spring migration on certain nights the listener is conscious of thousands of birds passing overhead. A few calls drift down, barely recognizable. On rainy and misty nights when the flocks fly low we are thrilled by the number of species traveling together. A Staten Island man heard these strange traveling companions in full song on one rainy May night: Spotted Sandpiper, Black-billed Cuckoo, Chipping Sparrow, Field Sparrow, and Brown Thrasher. The calls of the Rose-breasted Grosbeak and Myrtle Warbler were also distinguished among several other unrecognized notes.

The camper has a great opportunity to analyze the "mysterious noises of the night," and he finds that many are only moving birds. The sleepy "cheep" is difficult to assign to the proper bird, yet each bird has its characteristic tone. The Ducks winnow overhead, each kind with a different quality of wing whistle. A Chat becomes strangely garrulous through half of the night. The Woodcock has a startlingly sweet song as it does its sky-dance at mating time, and the whistle of its

wings is different from the whistle of the Mourning Dove's wings. Both are heard at dusk or later.

The Owls contribute much to the night, and the bird student often finds it difficult to distinguish some of the hootings. Heron croaks are puzzling to the uninitiated, and the calls of other night-wandering shore birds are most perplexing. The Oven-bird prefers to sing its unusual flight song at night, and it is often startling even to those who have heard it many times.

The bird student who goes into the woods at night, or at migration time takes to the rooftops, finds new thrills and pleasure in the experiences with night bird sounds.

—By *Lester Thomas, Woodcraft League of America.*

Science News-Letter, May 14, 1927

Tree Year In Camp Fire

This is Tree Year in Camp Fire. All over the United States Camp Fire Girls are not only planting trees, but are giving publicity to the necessity for reforestation and conservation through public programs, pageants and exhibits.

The outline of activities which has been prepared by the Department of Out-door and Health Activities is inclusive enough to give opportunity to all girls in the United States to

take part in the tree service to their country.

A cooperative agreement has been drawn up between Camp Fire Girls and the United States Forest Service. The idea of those who are directing the program is that the enthusiasm and interest should not be allowed to burn up quickly, but should continue over a period of years, so that Camp Fire forests and various tree activities once started will be watched and cared for by the girls for a number of years until they are on a lasting basis. Reports have already come in of 30,000 trees planted.

Camp Fire Girls have entered upon this program with enthusiasm and their activities have attracted interest all over the country.

Science News-Letter, May 14, 1927

Placing letter boxes on trolley cars is speeding up mail delivery in Germany.

A method of fitting a tiny blotter to the end of a fountain pen has been devised.

Quicksands are sand so smooth that the grains have little friction.

The largest active volcano in the world is Kilauea, in Hawaii.

"When you gather round the camp-fire—"

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Hybrid Trees

(Continued from page 302)

type. It was another case of necessity being the mother of invention—in fact, of three inventions very important in the development of the modern newspaper. Yet in spite of the predominance spruce came to have in the newsprint paper field, poplar persisted as the ideal paper material, and even now the higher grade of paper used in magazines consists of about 70 per cent. of poplar pulp to 30 from other sources.

Poplar then was the tree genus settled on by the co-operating scientists as the object of their effort to make big trees grow where little ones grew before. There are a considerable number of poplar species, distinct from each other yet united in a kind of botanical cousinship, and quite capable of producing offspring if artificially crossed. This was fortunate for the plans of the three men, for it permitted them to exploit that well-known though little understood biological phenomenon called "hybrid vigor."

Everyone is familiar with at least one hybrid: to-wit, the mule, a cross between the donkey and the horse. Everyone knows, too, that the mule excels either of his parents in a number of qualities desired in a beast of burden. If it were not so, this grotesque animal would not have been called into existence. The mule's superior strength and endurance are commonly credited to his hybrid birth—examples of "hybrid vigor." Though we are not so familiar with the facts, a majority of our cultivated plants are hybrids—crosses between distinct species, as in most of our fruit trees, or at least between definite varieties, as in many of our farm and garden crops. Hybrid vigor in these plants very commonly expresses itself in rapid growth with resultant bigness: twelve-foot cornstalks from ordinary six-foot parents, two-hundred-pound pumpkins from mere twenty-pound ancestors, chrysanthemums big as cabbages as offspring of flowers no bigger than ordinary field daisies. If hybrid vigor will do this with field and garden plants, reasoned the three scientists, why not with trees? Why not get a sixty-foot tree where a thirty-foot one grew before?

Good facilities for working on the artificial hybridization of poplars were found at the New York Botanical Garden, at Highland Park in Rochester, N. Y., and one especially desirable tree, the northern form of the necklace poplar, grew on the grounds of the agricultural experiment station

at Geneva, N. Y. Having one workplace a considerable distance south of another was an advantage, for trees could be worked over when they first came into bloom in New York City, and a week or ten days later when those at Rochester came on, the work could be repeated there to make sure of getting results at one place or the other.

Acrobatic Botany

Cross-breeding poplar trees is not an easy job, to be done safely and comfortably on the ground. The best blossoms are borne on the uppermost boughs, and the work involved a vast deal of climbing. The workers had first to shin up the female, or seed-bearing tree, and tie paper bags over the flowers before they opened. This was done to prevent strange pollen from drifting in and spoiling the experiment. Then they had to slide down again and climb a male, or pollen-bearing tree, to get the precious yellow dust with which to fertilize the caged female flowers. Then up the female tree again, to distribute the pollen. Later on, when the fertilization had "taken," they had to go up again and take off the protecting paper bags. After the seed had begun to set, they had to make another ascent, to tie on cheesecloth bags this time, which would prevent the seeds procured at the cost of so much trou-

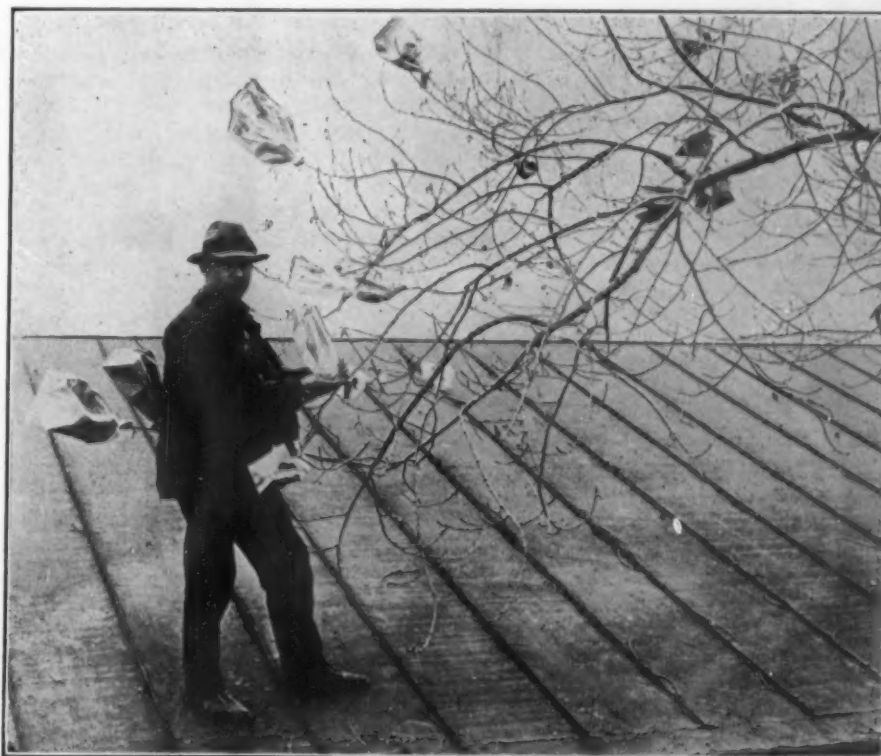
ble from drifting away on the wings of their web of cottony threads. Finally, when the seeds were ripe, they had to go up the trees once more, to harvest the crop. This human-squirrel program had to be gone through for dozens of trees. In a few instances the trees had accommodately thrown their branches over the roof of a building, so that the workers had a ready-made platform. But mostly they had to do their own climbing.

The precious crops of hybrid seeds secured, they were planted in flat trays of soil, and later set out in flower-pots, and watched as solicitously as though they were the costliest of orchids. Then the three companions had to wait a couple of years, measuring rates of growth, to see whether the hoped-for speeding-up due to hybrid vigor had materialized. In a gratifying number of cases it had.

Trees to Be Farm Crop

The best of their hybrid seedlings promise to give trees of at least 18 inches diameter in 18 years, and a total yield of 100 cords to the acre. Part of the crop will be harvested at the end of ten years, to thin out the forest, and the balance when the trees have matured at eighteen. Such rapid growth and such a yield puts

(Just turn the page)



BAGGING THE BRANCHES before the fruit is "hatched." Each twig of female catkins had to be isolated in a paper sack to prevent the experiment from being spoiled by the intrusion of wind-borne pollen from strange trees. A convenient roof here relieved the experimenter from shinning up the tree as usual.

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| WHAZ | Rensselaer Poly. Inst., Troy, N. Y. |
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Hybrid Trees

(Continued from page 305)

tree-growing into the agricultural class as an industry—makes it possible to reckon in periods of a few years instead of generations or centuries. Its effect on paper-making and the other industries that depend on wood-pulp should be nothing short of revolutionary.

One difficulty that breeders of hybrids often have to face troubles the poplar-growers not at all. Many hybrids, like the mule, are sterile, and others that can produce offspring bring forth all sorts of odd and bizarre broods—they do not "breed true," as the geneticist puts it. But hybrid plants can be propagated by grafting, as apples and oranges are, or they may even be vigorous enough to strike roots from cut twigs. Of the latter class, fortunately, are the poplars. They root from cuttings more easily than roses or geraniums—as easily as willows. All the would-be poplar-forest owners needs to do, therefore, is to stick a row of hybrid poplar stakes into suitable soil. Presently he will see them throwing out green leaves and shoots, and in a few years he will have a grove of trees, all as much alike as though they were branches on the same individual; for they are, after all, parts of the same individual that have achieved separate lives of their own.

For the three researchers who thought of exploiting hybrid vigor in the interest of pulp-wood growing there still remains the task of propagating their stock to the point where they can produce cuttings by the carload, and of convincing forest land owners, who are sometimes a bit conservative, of the real value of their discoveries. Unlike many scientists, they will probably live to see monuments to their endeavors, in the form of scores of thousands, perhaps hundreds of thousands, of acres of flourishing hybrid poplars.

Science News-Letter, May 14, 1927

The world's most effective fire fighting system is claimed by Paris.

More than 700 species of flowering plants have been found north of the Arctic Circle.

The receding of Niagara Falls may drain off Lake Erie, in the course of geologic time.

The sardine canning industry in the United States has grown chiefly as a result of the European War, when imports were cut off.

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HYGIENE

Babies Face Hazards

By S. J. CRUMBINE

Dr. Crumbine is general executive of the American Child Health Association.

The average American is proud of the safeguards put about the children of his country and inclined to feel that there is very little left to be done by the United States in the way of health protection.

The scientist, working among stolid, unchangeable facts and figures, is less optimistic. He knows, for instance, that life in a war-time trench during the last war was far safer than it is in America's peace-time cradle. Records show that for every thousand men in the American army, ten lives were lost. For every thousand babies born in the United States in 1924, over seventy lives were lost the first year.

The scientist knows too, that forty thousand school children in America die yearly of preventable causes; that one-third of crippled adults are injured during the first six years of their lives and a large per cent. needlessly handicapped; that a baby born in this country today has slightly more chance of living more than a week than has an old man of ninety.

To put these startling facts and statistics and their remedy before the layman—the mother, father, and teacher—is the object of National Child Health Day, the idea for which originated with the American Child Health Association four years ago. The day is celebrated on May 1, the beginning of spring, and its fourth observance found complete year-round organizations in every state, with chairmen, usually representing state health departments, aided by national groups in the country, such as the churches, government departments, welfare agencies and clubs.

The ideal of National Child Health Day is so to focus attention upon the needs of children that in every community an adequate health service can be worked out.

Of the terrific loss of life under one year of age in 1924, we find that one-half (54.5 per cent.) of these deaths occurred during the first month, and the majority during the first seven days. To these dying so early must be added those born dead. The enormous still-birth rate and early infancy rate point to causes operating before birth, which can only be reached through care of the expectant mother. Therefore, the first community concern in providing a child health service is to provide simple, yet practical means by which every expectant

mother may secure such medical advice and care as will minimize the hazard of child-bearing and insure a vigorous and well-nourished child at birth.

We find, too, in a further study of the causes of infant mortality, that large numbers still die from cholera infantum, a disease much more common among bottle-fed than breast-fed babies, and due probably in the majority of instances to unwholesome milk. This fact points to another way in which communities may safeguard the lives of babies, as well as children and adults, by providing a clean and safe milk supply.

The production and distribution of safe milk is so easy of accomplishment that it is fair to say that the community which fails to provide a safe milk supply for its people is guilty of a grave offense against society, and must be morally responsible for the results of such neglect. It is just as easy and certain to kill with a contaminated milk or water supply as with the pistol or dagger; the victims are just as dead.

Science News-Letter, May 14, 1927

MEDICINE

Disease Fought After Death

Immunity to disturbing disease invasions from the outside does not need to end with the death of the animal that possesses it, but will live on in a part of its tissues if these can be kept alive by artificial means. Dr. William Bloom describes, in *Archives of Pathology*, an ingenious experiment in which he showed that bits of a rabbit's lung, kept growing in a glass vessel after the rabbit's death, were still able to kill off disturbing elements against which the rabbit had been rendered immune during its lifetime.

In his research, Dr. Bloom substituted alien red blood cells, taken from a pigeon, for disease germs. He was able to do this because the blood of any animal will react toward many outside substances, especially proteins, very much as though they were hostile germs. He made the rabbit immune to the injection of these blood corpuscles by suitable physiological treatment. Further injections of pigeon blood corpuscles had no effect on the rabbit; they were simply destroyed by the white cells in its blood. Then the rabbit was killed, and a bit of its lung kept going as a tissue culture. Pigeon's blood was placed upon it, and the conduct of the white blood cells in the culture watched through the microscope. These minute "policemen of the blood" acted as though they were still in the

living animal, seizing upon the alien corpuscles and devouring them.

As a further test, a tissue culture was made from the lung of another rabbit which had not been immunized. When pigeon's blood was added, its white cells did nothing. But when a little blood serum from the immunized rabbit was added, there seemed to be something in it that stimulated the white cells to action, for they then eagerly went after the pigeon corpuscles and soon destroyed them.

Science News-Letter, May 14, 1927

ASTRONOMY

Dust Cloud Envelops Earth?

That the earth, the sun, and all the nearby stars may be surrounded by a cloud of cosmic "dust," or some sort of absorbing matter, which extends from the sun for 600 trillion miles or more, is the idea advanced by Prof. Edward S. King, of the Harvard College Observatory.

Prof. King makes this suggestion after a study of the color of the stars, and points out that such clouds of absorbing matter are not unique. In many parts of the sky they hide the stars behind them, and they surround some star clusters. One of these is the famous group, the Pleiades, a number of stars loosely gathered together, and mixed in with such a "dust" cloud.

It has been suggested before that such a cloud extends through all space, and that its effect is to make stars look redder, as their light passes through a greater thickness of it. This effect is similar to the red sunsets which appear when the earth's atmosphere is full of dust.

However, if the clouds were present throughout the universe, the most distant stars would look intensely red, but this is not the case. Prof. King does find that up to a certain distance, stars do get redder, the farther away they are; but beyond this distance, about a hundred light years, as the astronomer measures it, there is no increase in redness with distance. The light year is the distance that a beam of light will travel in one year, or about six trillion miles.

His observations may be explained, says Prof. King, if the sun, and all the stars within that distance are in a dust cloud, so that the farther away they are, the more the material their light has to penetrate, and the more of the blue rays they lose, making the light proportionally stronger in red. But the light from stars outside the local cloud has to penetrate the same amount of dust, regardless of how far the stars are.

Science News-Letter, May 14, 1927

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Liver Extract For Anemia

Beef liver may be the means by which science will eventually succeed in finding a cure for pernicious anemia, a disease that almost invariably terminates in death. Scientists at Harvard University have established that a diet rich in liver promptly increases the number of red blood corpuscles in patients with this disease and they are now endeavoring to isolate the active principle in liver. Lack of this principle apparently prevents patients with pernicious anemia from manufacturing red blood cells.

Last year Drs. George R. Minot and William P. Murphy of the Collis P. Huntington Memorial Hospital of Harvard University and the Peter Bent Brigham Hospital, reported the successful treatment of patients with a diet containing large amounts of liver. Over 50 patients have now been successfully treated for from 1 to 3 years with a diet containing approximately 200 grams of liver a day. Even though the individual with pernicious anemia knows that he is the gainer thereby, a daily diet of liver in the quantities necessary to replenish the blood with red corpuscles is difficult to take for a long time. Consequently a small dose of liver extract daily that does as much good as 300 grams or more of the whole liver represents a big advance in the treatment of this disease. The causes of this fairly common malady are unknown, though it is believed by some that a predisposition toward it is inheritable. This disease should not be confused with anemia due to common causes.

Dr. E. J. Cohn and his collaborators in the Department of Physical Chemistry in the Harvard Medical School have isolated a non-protein, non-fat containing fraction of liver that promptly produces young red blood cells, and permits the total number of red blood cells to increase. Drs. Minot and Murphy are determining the effectiveness of the clinical uses of the successively purified extracts that are being prepared.

The scientists report that the most concentrated preparation that has thus far been administered produced about four times its weight of erythrocytes, or red blood cells, within a fortnight. An effective daily dose amounts to about one-third of an ounce, or 10 grams. Nine patients with pernicious anemia have been fed the extract with entire success during the past months.

(Just turn the page)

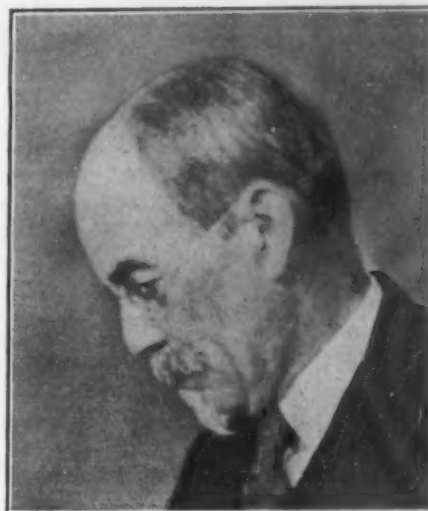
Electrical Rubber Castings

Inner tubes, water bags and other articles of pure rubber, stronger and more durable than rubber obtained by any other process, are now being made by electric moulding, essentially the same process that is used in electroplating silver ware and in making cuts for newspaper pictures, according to the Engineering Research Foundation. The process was worked out by two groups of researchers, one in America and one in Hungary, neither of whom knew that the other was engaged in the problem. The American workers were S. E. Sheppard and L. W. Eberlin of the Eastman Kodak Company, and the Hungarian group was led by Paul Klein and A. Szegvari.

"Both groups were practically interested in improvement of the quality of rubber goods," an official of the Engineering Research Foundation states. "They knew that when the solid dried crude rubber is worked upon a mixing mill in the rubber factory, the rubber substance was made softer and weaker. They knew that the less rubber was heated or worked, the better was its quality. They also knew that research of chemists in recent years had shown how vulcanization may be carried on at lower temperatures than formerly and the necessary sulphur combined with rubber with minimum of loss of quality. Certain substances known as accelerators possess the property of permitting vulcanization to be accomplished at relatively low temperatures. However, if these accelerators were incorporated on the usual mixing mill, the temperature would be sufficiently high to cause vulcanization during mixing and spoil the goods.

"These men conceived the plan of so depositing rubber on forms, from latex, that the rubber particle itself was not altered, and made the astonishing discovery that electro-deposited rubber had the highest quality ever observed. There were many problems to be solved before this was made practical. It was necessary to incorporate other substances to be deposited simultaneously, such as sulphur, zinc oxide and carbon black. These latter two substances are necessary in rubber goods to give toughness. A long investigation was carried out to find means

(Just turn the page)



JOHN JACOB ABEL

Crystallizer Of Insulin

A man no longer need be old when he reaches the biblical span of three-score years and ten, and Dr. Abel is a living example of this truth, for next Thursday, the nineteenth of May, he will celebrate his seventieth birthday. His latest researches have been among the most important that he has made, and on May 27 the American Chemical Society will bestow on him the highest honor in their power—the Willard Gibbs Medal.

It has only been a few years since insulin was discovered and gave sufferers from diabetes a new lease on life, but despite the success of insulin in medicine, it has been recognized that physicians were not using a pure product. Most chemical compounds, when they are really pure, can be induced to form regular crystals. A few months ago, for the first time, Dr. Abel succeeded in forming crystalline insulin, which shines like bits of uncut diamond when viewed through the microscope. One milligram of crystalline insulin, a piece about the size of a small grain of sand, has as much power to reduce blood sugar as a hundred units of insulin as ordinarily used in medical work.

The next step, and the one on which Professor Abel is now working, is to analyze the substance, and find just what elements, and in what arrangements, it contains. This done, it may then be possible to prepare the stuff synthetically, but with the true caution of a scientist, he makes no promise that he will do it.

This is not the first work that Dr. Abel has done on purifying secretions

(Just turn the page)

Insulin Crystallizer

(Continued from page 309)

of the so-called ductless glands, for of four such gland extracts that have been purified, he has accounted for three.

A native of Cleveland, Ohio, Dr. Abel was born on May 19, 1857, and graduated from the University of Michigan in 1883. But before his graduation he had served as a high school principal, and as superintendent of schools, at La Porte, Indiana. Then he studied at Johns Hopkins, Leipzig, Strassburg, Heidelberg, Vienna, Berne, Wurzburg and Berlin, receiving the degree of M. D. from Strassburg in 1888. From 1891 to 1893 he returned to Michigan as a member of the faculty, but in 1893 he became professor of pharmacology at Johns Hopkins, the post which he still holds.

Science News-Letter, May 14, 1927

It used to be thought that heat was a fluid.

The fastest racing greyhounds have very large hearts.

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Rubber Castings

(Continued from page 309)

to disperse them in water, mixed with the latex particles, without coagulating the latex. A noteworthy achievement has been the discovery of means by which these rubber layers may be free from bubbles, for when an electric current is passed through a solution, bubbles of gas are formed on anode and cathode. So they hit upon the scheme of surrounding the anode with a porous clay diaphragm. The anode is therefore immersed in electrolyte inside a porous clay cell or dish and the rubber particles together with those of zinc oxide, sulphur, etc., are deposited upon this porous so-called anode diaphragm. Thus the rubber as it collects forms a continuous, homogeneous, tough covering of uniform thickness. Any thickness up to an inch or more is practicable. Rubber thus formed is stronger than rubber prepared by the old methods, and is free from gas or air holes.

"Industrial development is already well advanced. Continuous, automatic production of certain kinds of articles is feasible. Manufacture of inner tubes for automobile tires is the most important application, if quantity be the criterion. Bathing caps, stationers' plastic bands, tobacco pouches and hot-water bottles are other examples. Insulation for wires and other things electrical is another application. No high temperatures are used. For impregnating textiles the rubber can be more intimately applied to the fibers."

British and American interests, it is stated, have united to form a corporation to bring goods manufactured by the new process on the market in large quantities.

Science News-Letter, May 14, 1927

It is believed that among barbaric tribes as well as civilized races a majority of both sexes were right-handed.

England found time during the World War to send out two expeditions to test the Einstein theory of relativity.

After the Japanese earthquake of 1923, about 300,000 of those who fled to the suburbs made their homes there permanently.

Nearly all genuine armor and weapons of the Middle Ages are in the hands of national museums or private collectors.

Liver Extract

(Continued from page 309)

The chemists are still uncertain as to the exact amount of the effective substance in the liver extract, since despite the fact that the purification has proceeded far, a large part of the material in the present mixture may eventually prove to be inert. After further purification it may be possible to isolate the chemical substance, or substances, that are specifically involved, and thereby learn more of the reactions and of the physiological mechanisms that are disturbed in this disease.

The development of the use of liver extract in the treatment of pernicious anemia may be as important in its way as the outstanding achievement in the treatment of diabetes three years ago by the use of insulin, an extract of a particular part of the pancreas. Physicians and scientists are watching the clinical trials of the Harvard liver extract with great interest. Further reports of the treatments are to be made at the coming meeting of the American Medical Association in Washington beginning May 16.

Science News-Letter, May 14, 1927

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SOCIOLOGY

87-Child Family A Myth

The record of the world's biggest family, recently claimed for a German household of 87 youngsters, must be sought elsewhere, in the opinion of European scientists who have looked into the matter.

The father of the family in question, named Scheinberg, is reported to have married twice. His first wife had 69 children—four quadruplets, seven triplets, and 16 sets of twins. After the death of the first wife, he married again and had 18 additional children.

Records of such remarkable families are of interest to scientists who are studying problems of eugenics, population, and heredity. In this case, the *Journal of Heredity* addressed an inquiry to authorities on these subjects in Germany and Austria, asking whether the 87-child family really exists.

"No confirmation of the existence of this huge family has been obtained, though the story was alleged to have appeared in an Austrian medical journal," said Robert Cook, editor of the *Journal*.

Dr. Lenz, of the University of Munich, who has investigated a number of such alleged cases, has found that hysteria or a desire for publicity sometimes causes an amazing expansion of ordinary sized families.

"Similar stories of families with repeated multiple births are often reported," he writes. "Generally they turn out to be the hallucination products of hysterical women who want to make themselves interesting through accounts of multiple births."

Dr. Felix Tietz, of Vienna, states that "after having spoken to, or corresponded with all the persons concerned with eugenics, growth of population, etc., I can assure you that some misunderstanding must be the basis of that rumor."

"In the medical literature are accounts of women having nearly 50 children, but none of these is accepted as unquestionably authentic," said Mr. Cook. "One of the most reliable is considered to be the case of Dr. Mary Austin, a Civil War nurse. She lays claim to a family of 44 children—13 twins and 6 triplets—and in addition she found time to study medicine and get a doctor's degree while she was bringing up her family.

"It would be a matter of scientific interest to have reliable information about the maximum size of human families, and any one who

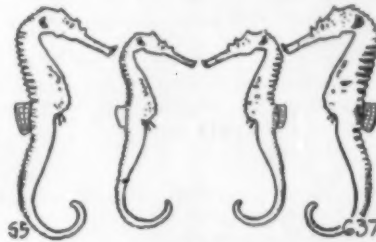
knows of families approaching a third the size of the alleged Scheinberg family is invited to communicate with the *Journal of Heredity*, in Washington."

Science News-Letter, May 14, 1927

BIOLOGY

NATURE RAMBLINGS

By FRANK THONE



Sea Horses

"Horses, . . . horses, . . . little horses."

Thus a recent song, that is already old. The author, who iterately declared himself to be "goofy over horses," might well have been contemplating a tank of sea horses at the aquarium when his fantastic Pegasus bore him up to the heights of song-hit-dom. Certainly these strange little fish, veritable gargoyles of the sea, might inspire odder verses than his.

Except for the blunt fin on his back, the sea horse scarcely looks like a fish. Emphatically he does not swim like a fish, for he holds himself approximately vertically instead of horizontally, and travels through the water in a series of little jerks. Further, he does not use his tail like a fish, nor yet like a horse's, but much more like a monkey's. For he coils it around bits of eel-grass or seaweed wherein he makes his home, and thus holds himself at anchor. Only, since "down" in the sea is not toward the bottom but toward the surface, whither fishes will "fall" if they let themselves go, the sea horses's monkey-pose is the opposite of that of the tree-dweller, for his tail is beneath and his head above.

As though the real sea horse were not queer enough by his own unexaggerated self, certain medieval and early modern writers had to put on trimmings: "The Sea Horse, between Brittany and Norway, is oft seen to have a head like a horse, and to neigh; but his feet and hoof are cloven like to a Cow's; and he feeds both on Land, and in the Sea. He is seldom taken, though he grow to be as big as an Ox. He hath a forked tail."

Science News-Letter, May 14, 1927

ASTRONOMY

Mysterious Celestial Object

What was the mysterious object that appeared for a night in the constellation of Camelopardalis, a rather faint star group now low in the northwestern sky in the evening? This is the question asked by Dr. Ejnar Hertzsprung, a famous Dutch astronomer, who has spent the past winter in studies at the Harvard College Observatory. He found the object on a photographic plate made on the night of December 15, 1900, but it did not show up on plates made the night before or after.

Just what the strange object is, Prof. Hertzsprung cannot imagine. It appears like a faint patch of light about the same brightness as a star of sixth magnitude, just at the limit of naked eye visibility. That it is not due to a defect on the plate is shown by the fact that the image is double, as two exposures were intentionally made on the same plate, one after each other. Like the surrounding stars, the object shows two images side by side. As the two exposures were made less than an hour apart, but nevertheless, there is a considerable difference in the images, Prof. Hertzsprung thinks that the thing was in the solar system, and no farther than some of the planets. If two other bodies, like two asteroids, or small planets, collided in space they might produce a flash of brief duration, but it would not be apt to be perfectly round, like the thing on the plate. On the whole, to Prof. Hertzsprung, it is "the most serious riddle" that he has met with.

Science News-Letter, May 14, 1927

AUTOMOBILES

Solid Tires Blow Out

The auto owner who casts longing glances on passing trucks with solid tires as he repairs a blowout on his own car on a hot day might be just as badly off if he could dispense with his pneumatic tires. Solid tires may also blow out, L. W. Fox, tire expert of Akron, Ohio, points out in a report to the Society of Automotive Engineers. Such blowouts are caused by running the solid tire equipped truck too fast. The speed generates heat within the tire faster than the compound can dissipate it, with the result that the compound is disintegrated and melts. This forms gas within the tire which may blow out through the tread or the side, in either event effectually ruining the tire.

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Washington, D. C.

First Glances at New Books

THE FATHER IN PRIMITIVE PSYCHOLOGY—Bronislaw Malinowski—*Norton* (\$1). The strange ideas of South Sea Islanders regarding kinship and the physiology of sex are recounted. "My firm conviction," concludes this Polish anthropologist, "is that the ignorance of paternity is an original feature of primitive psychology, and that in all speculations about the origin of marriage and the evolution of sexual customs, we must bear in mind this fundamental ignorance."

Science News-Letter, May 14, 1927

HOW I CAME TO BE—Armenouhie T. Lamson—*Macmillan* (\$1.75). The autobiography of an unborn infant, scientifically accurate but written in popular language in response, according to the author, to the need of the present youth for true knowledge concerning motherhood and the prenatal life of a child. Probably will do some good; not more than average sentimental.

Science News-Letter, May 14, 1927

THE ROMANCE OF CHEMISTRY—William Foster—*Century* (\$3). Encyclopedic in its content and breadth, this volume by a Princeton chemistry professor is entertaining enough to read, rather than simply to consult.

Science News-Letter, May 14, 1927

EMINENT CHEMISTS OF OUR TIME—Benjamin Harrow—*Van Nostrand* (\$3). The second edition of this interesting work, now augmented in usefulness by detailed accounts of the work of the chemists described, and copious references to original papers.

Science News-Letter, May 14, 1927

CHEMICAL LABORATORY MANUAL—L. Jean Bogert—*Saunders*. A book intended to accompany the author's "Fundamentals of Chemistry."

Science News-Letter, May 14, 1927

PRINCIPLES OF CHEMISTRY—Joseph H. Roe—*Mosby* (\$2.50). An up-to-date text-book of chemistry, with a laboratory guide bound in at the back.

Science News-Letter, May 14, 1927

FIRST PRINCIPLES OF CHEMISTRY—F. W. Dootson and A. J. Berry—*Cambridge Univ.* A well written course in elementary chemistry, intended principally for the first-year students in English universities.

Science News-Letter, May 14, 1927

RADIO

Radio Talks With Movies

A hook-up between radio and the movies for scientific purposes has been perfected in Germany, which will permit eminent scientific authorities to lecture to many audiences at the same time, and to illustrate their addresses with motion pictures, no matter how widely separated the various auditoriums may be. The arrangement is relatively simple in principle. In each auditorium the films which are to illustrate the lecture are run on an ordinary projector, geared to a motor which is synchronized with all the other motors in the series, so that each point in all the films is thrown on the screens at exactly the same instant. The lecturer watches one of the projections, or a private projection in his own study, and times his remarks to fit the scenes or processes being illustrated. His lecture, of course, is broadcast by ordinary radio, and is made audible in the various halls by loud speakers.

Science News-Letter, May 14, 1927

INVENTION

Quota Law Speeds Invention

The immigration quota law, which has now been in effect for two years, has cut down the steady stream of "cheap labor" into this country, and as a result industries have made extraordinary progress in finding new tools and machines to take the place of an unlimited supply of laborers.

"From one end of the country to the other, reports of new labor-saving machinery are coming in almost daily," according to Prof. Robert D. Ward, of Harvard University, who explains how the new law is working, in the *Journal of Heredity*.

"We hear of new coke-handling apparatus," he states, "of mechanical brickmakers, of track-layers, and of numberless other machines which are replacing crude hand labor and are at the same time saving money. The question, 'Who will dig our ditches?' is answered by mechanical ditch-diggers, the largest of which can do the work of 400 men."

Rapid increase in machines to do rough work is decreasing unemployment, Professor Ward finds. The peaks and hollows of seasonal employment are being smoothed out. The new industrial situation means higher prices for labor, but eventually, it is prophesied, it will mean a lower cost of production.

Even the shortage of domestic servants is by no means a "national calamity," says this economist.

The home standards of comfort and living are not being lowered; they are being simplified and improved, he explains. Progress in systems of food preparation and food distribution, modern equipment for cooking and house cleaning, do more for the present day housewife than cheap labor did for her grandmother.

Answering the argument that the new law is preventing relatives of immigrants from joining their families in this country. Professor Ward points out that practically 80 per cent. of all immigration under the new law consists of "relatives." Since 1921 all aliens in overseas countries have known about the numerical restrictions on immigration to the United States. It is the immigrant himself who, if he comes here alone, does the separating, Professor Ward states.

Science News-Letter, May 14, 1927

ENTOMOLOGY

Bees Killed By Sprays

Honeybees are killed by minute quantities of arsenic as used in sprays for fruit trees and arsenical sprays should not be used while trees and plants are in full bloom, according to Dr. N. E. McIndoo and G. S. Demuth of the U. S. Department of Agriculture. Such sprays should be used only after ninety per cent. of the blossoms have fallen from the trees, when the poisons are still efficacious and the majority of bees have abandoned the blossoms.

Aside from the value of the honey crop they produce, bees are of considerable value in transferring pollens and thus effecting fertilization, and should be protected by horticulturists. The conclusions are the result of several years' study recently completed by Department scientists, because of general agitation on the subject.

Science News-Letter, May 14, 1927

GENERAL SCIENCE

Sigma Xi Fellowships

Fellowships available for workers in all fields of science will be awarded early in June by Sigma Xi, the society for the promotion of research. These will be for the year 1927-28, and there are no restrictions as to the university or the country in which the holder is permitted to work. Applications may be made before May 30 to Dean Edward Ellery, Union College, Schenectady, N. Y.

Science News-Letter, May 14, 1927

A small crank machine to shell peas has been invented.

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Why the Weather is issued each day—and in it Charles Fitzhugh Talman, meteorologist, tells the "why" of climatic conditions that puzzle. Weather conditions near and far are brilliantly, cleverly explained.

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Anniversaries of Science

May 19, 1884—Discovery of inoculative remedy for rabies announced by Pasteur.

Although it was these experiments at Pouilly-le-Fort and the anthrax vaccinations which first overcame the general skepticism regarding the new doctrines, it was the prophylaxis for rabies which gave them the great place in public confidence which they now enjoy. We cannot fail to recognize that, from this point of view, this disease was well chosen. It has, fundamentally, no importance. The mortality which it causes is slight. Man can protect himself from it without any scientific apparatus, simply by police measures. . . . But rabies has a hold on the public imagination; it evokes legendary visions of raging victims, inspiring terror in all those in their vicinity, bound and howling, or asphyxiated between two mattresses.

The reality is much more simple and calm, and few deaths are more peaceful than certain deaths from rabies, but it was easy to foresee that a victory over this disease would be reckoned none the less a great one. Only it did not seem easy. In the first place, while rabies might pass with the public for a virus disease, it had not that character for the physician or the surgeon, because every man and every animal that contracted it died from it, and it was consequently impossible to know whether it would recur in the same individual.

—Duclaux: *Pasteur: The History of a Mind.*

Science News-Letter, May 14, 1927

May 24, 1543—Nicolas Copernicus died.

I began to consider the mobility of the Earth; and although the idea seemed absurd, yet because I knew that the liberty had been granted to others before me to postulate all sorts of little circles for explaining the phenomena of the stars, I thought I also might easily be permitted to try whether by postulating some motion of the Earth, more reliable conclusions could be reached regarding the revolution of the heavenly bodies, than those of my predecessors.

And so, after postulating movements, which, farther on in the book, I ascribe to the Earth, I have found by many and long observations that if the movements of the other planets are assumed for the circular motion of the Earth and are substituted for the revolution of each star, not only do their phenomena follow logically therefrom, but the relative positions and magnitudes both of the stars and all their orbits, and of the heavens themselves, become so closely related that in none of its parts can anything be changed without causing confusion in the other parts and in the whole universe.

—Nicolaus Copernicus: *Dedication of the Revolutions of the Heavenly Bodies.*

Science News-Letter, May 14, 1927

May 24, 1844—The first message was sent over the Morse telegraph.

"What hath God wrought."

Science News-Letter, May 14, 1927

The cat was first domesticated in Egypt.

BOTANY-CHEMISTRY

Plants As Energy Converters

Quotation from PHOTOSYNTHESIS—H. A. Spoehr—Chemical Catalog Co.

We may say that solar radiation is the greatest and an inexhaustible supply of energy for our earth. The chlorophyllous plant is a converter of this energy into potential energy; it is from a chemical viewpoint a great reducing mechanism, producing compounds which can combine with oxygen. The transformation of matter involved in this conversion of energy, that is, the chemistry of photosynthesis and metabolism, present an exceedingly complex picture. The main reason for this apparent complexity is that photosynthesis is intimately connected with the vital process of the plant and hence subject to the many fine adjustments characteristic of living protoplasm. No analysis of the process of photosynthesis in plants is reliable which does not give due regard to this fact. This need not mean, however, that a photosynthesis attaining the same or analogous results can never be achieved without the action of living protoplasm. Only, up to the present time no chemical system has been devised which can approach the but slighty on heating and thus will plant in efficiency or usefulness.

Science News-Letter, May 14, 1927

ENGINEERING

Tests Made in "Padded Cell"

A padded cell to protect people from loose nuts, though not of the human variety, has just been completed at the works of the Metropolitan Vickers Electric Company, of Manchester. It is a protection not only against loose nuts, but against bolts, gears and screws as well, for the "cell" is a chamber for testing high speed machinery, which is liable to fly to pieces under the strain.

When a piece of such machinery is completed, it is tested in the chamber which is underground and has walls nine feet six inches in thickness, composed of wood, steel, bags of sand, air cushioning space and reinforced concrete. It is large enough to take "rotors" 14 feet 6 inches in diameter, or shafts 40 feet long. High speed motors turn the machinery under test, which is watched from outside by means of various electrical devices and fast cameras. In addition, by means of a hole bored through a shaft, a special telescope permits actual scrutiny of the interior of a moving part.

The need for such protection is emphasized in a recent issue of the

scientific magazine, *Nature*, where it is stated that in a 25,000 horsepower electric generator driven by a water or steam turbine, and running at 3,000 revolutions per minute, the rotating part weighs about 20 tons, and the energy is about the same as that developed in a head-on collision between two railroad trains each carrying fourteen cars and running at 35 miles an hour.

Science News-Letter, May 14, 1927

INVENTIONS

Metal Statues From Plaster

A German artist-inventor has devised a new technique for literally turning plaster statues into metal ones, by means of an ingenious "extrusion pistol" which projects a fine stream of melted bronze or other metal against the inside of a hollow plaster cast with such force that it carries on through the porous substance and comes out as a thin film, hardening on the outer surface. The process is said to be extremely rapid, five minutes' operation of the pistol being sufficient to metallize a plaster cast the size of a man's hand.

Science News-Letter, May 14, 1927

AGRICULTURE

Farmers Embattled Again

(The following timely contribution from the New York State College of Agriculture at Cornell University is substituted this week for a Science Service prize poem.)

We read in Emersonian ode
How, down along the Concord road,
"By the rude bridge that arched the flood,"
Stout farmers in the April mud
Made good the challenge they had hurled
And "fired the shot heard round the world."
Right here and now as loud as then
There sounds a call for Minute Men.
A state of war exists once more;
A foreign foe is on our shore.
We rightfully apply the term
To this here new corn borer worm.
He is a cautious coot, dodrot him;
He won't come out where we can swat him.
Within the cornstalk armor snug,
His tunnels, here and yonder dug,
Cause breaking over of the tassels
And likely tell you where he wrastles.
Just cutting up a stalk or so
Will show the cuss in status quo.
Ensil the crop where he is seen,
Plow all the weeds and stubble clean.
If every weed and stalk go under,
You're sure to bother him like thunder.
I aim to land a hearty swat
When he appears on my back lot,
And trust that men with broader acres
Will not be idle belly achers,
But smite instead his solar plexus
Before his sons are born to vex us.
O let us rise and crush the stranger
Who puts the Indian corn in danger.
Or if we can't destroy him quite,
Let's make him know he's in a fight.

—Bob Adams.

Science News-Letter, May 14, 1927

Summer is Nature's Own Time—

The Science News-Letter Is Therefore Pleased To Announce

SPECIAL OUT-OF-DOORS PAGES

Turn to Page 303 and you will see the first of ten nature pages prepared by leading nature-study and outdoors experts under the supervision of the Coordinating Council on Nature Activities, an organization that brings together leading societies and institutions interested in a proper understanding of the great outdoors. Other pages, full of wood lore and useful interpretation of forest, field and garden, will appear during June and August.

Other News-Letter Features Scheduled for May, June and July

Nature Ramblings (a weekly nature note by Dr. Frank Thone).

Star Charts of Summer Heavens (an explanation of the stars by James Stokley).

How Butterflies and Other Insects Smell.

Europe's Total Eclipse of the Sun (explained and reported by Prof. S. A. Mitchell, leader of America's only expedition).

How to Observe the Moon's Total Eclipse to occur in June.

Venomous Serpents and Science's Protection Against Them (an authoritative article by Dr. Raymond L. Ditmars, of the New York Zoological Gardens).

Medicine's Latest Achievements and Marvels.

Science Helps Coaches to Train Winning Athletes (the first authoritative statement of the new investigations of sprinting by the famous English athlete-scientist and Nobel prize winner, Prof. A. V. Hill).

Man's Age and Evolution in the Light of New Discoveries (raising the question as to whether ancient man lived in America).

Great Events in the Science of the Past.

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